

**CLAIMS**

- 5 1. A data processing system comprising: a local probe storage array having a plurality of sensors for reading data from a storage surface; a plurality of data processing elements mounted on the storage array and each connected to different sensor of the array for processing data read by said connected sensor.
- 10 2. A data processing system as claimed in claim 1, wherein the storage surface comprises a plurality of data fields each corresponding to different one of the sensors and each having a matrix of bit storage locations individually addressable by the corresponding sensor.
- 15 3. A data processing system as claimed in claim 2, wherein the storage surface comprises a user data portion dedicated to storage of user data for manipulation by the processing elements, and a program code portion dedicated to storage of program code for configuring the processing elements to manipulate the user data.
- 20 4. A data processing system as claimed in claim 3, wherein the program code portion and the user data portion are located in different fields of the storage surface.
- 25 5. A data processing system as claimed in claim 3, wherein each field of the storage surface has at least one bit location assigned to the program code portion and at least one bit location assigned to the user data portion.
6. A data processing system as claimed in claim 3, wherein each field of the storage surface has different bit locations assigned to different memory pages.
- 30 7. A data processing system as claimed in claim 1, further comprising a random access memory mounted on and connected to the data processing elements.

8. A data processing system as claimed in claim 1, wherein the data processing elements comprise logic for comparing an input bit pattern with a bit pattern recorded on the storage surface.

5 9. A data processing as claimed in claim 1, wherein at least one of the data processing elements comprises a microprocessor.

10. A data processing method comprising: reading data from a storage surface via sensors of a local probe storage array; and processing the data read from the surface via a plurality of data 10 processing elements mounted on the storage array and each connected to a corresponding one of the sensors of the array.

11. A memory for storing data comprising a local probe storage array having a plurality of sensors for reading data from a storage surface, the storage surface comprising a plurality of data 15 fields each corresponding to different one of the sensors and each having a matrix of bit storage locations individually addressable by the corresponding sensor, wherein each field of the storage surface has different bit locations assigned to different memory pages.

12. A method for storing data in a local probe storage array having a plurality of sensors for 20 reading data from a storage surface, the storage surface comprising a plurality of data fields each corresponding to different one of the sensors and each having a matrix of bit storage locations individually addressable by the corresponding sensor, the method comprising assigning different bit locations of each field of the storage surface to different memory pages.